# UC-454E+ HD Encoder

# 4*HD-SDI input 4-in-1 MPEG2/H.264 Encoder

***SW Version: 1.01s***

***HW version: 4.4***

***Web NMS version: 1.00***

# About This Manual

## Intended Audience

This user manual has been written to help users who will be installing, using, and integrating this product. Some of the chapters require prerequisite knowledge in electronics and broadcast technologies and standards.

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# Chapter 1 Introduction

## 1.1 Product Overview

UC-454E+ HD Encoder is our new professional HD audio & video encoding device with powerful functionality. It has been equipped with 4 HD-SDI channels input supporting MPEG-2 and MPEG-4 AVC/H.264 video encoding and MPEG-1 Audio layer 2, LC-AAC, HE-AAC and AC3 audio encoding. The 4 encoded SDI programs will output through ASI and IP ports in MPTS or SPTS. It adopts inner drawer-type structural design which greatly facilitates the change of encoding modules if needed.

We apply dual power supplies with one for backup to provide a better protection for your business.

## 1.2 Key Features

- **Dual power supply**
- **MPEG2 HD/SD & MPEG4 AVC/H.264 HD/SD video encoding**
- **MPEG1 Audio Layer 2, LC-AAC, HE-AAC and AC3 audio encoding**
- **4*HD-SDI input**
- **Support VBR/CBR rate control mode**
- **Support CC (closed caption) EIA 608 & EIA 708**
- **Support Low Latency function**
- **Support PSI/SI editing and inserting**
- **Supports IP null packet filter**
- **ASI output, IP (MPTS & 4 SPTS) output over UDP, RTP**
- **LCD display, Remote control and firmware**
- **Web-based NMS management; Updates via web**

# 1.3 Specifications

## Encoding Section

| Video | |
|---|---|
| Encoding | MPEG2 & MPEG4 AVC/H.264 |
| Input | HD-SDI*4 |
| Resolution | 1920*1080_60P, 1920*1080_50P, (-for MPEG4 AVC/H.264 only)<br>1920*1080_60i, 1920*1080_50i,<br>1280*720_60p, 1280*720_50P<br>720*480_60i, 720*576_50i |
| Bit Rate | 0.5~19.5Mbps for H.264 encoding<br>1~19.5Mbps for MPEG-2 encoding |
| Rate Control Mode | CBR/VBR |
| **Audio** | |
| encoding | MPEG1 Layer II, MPEG2-AAC, MPEG4-AAC, Dolby Digital AC3 |
| Sample rate | 48KHz |
| Bit rate | 64kbps, 96kbps,128kbps, 192kbps, 256kbps, 320kbps |

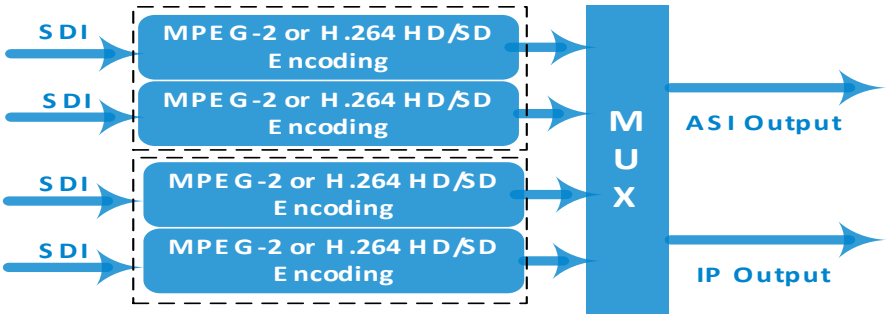
## System

| | |
|---|---|
| Local interface | LCD + control buttons |
| Remote management | Web NMS |
| Low Latency Mode | Normal, mode 1, mode 2 |
| output | 2*ASI out (BNC type);<br>IP (1 MPTS & 4 SPTS) over UDP, RTP (RJ45, 100M) |
| NMS interface | RJ45, 100M |
| Language | English |

## General

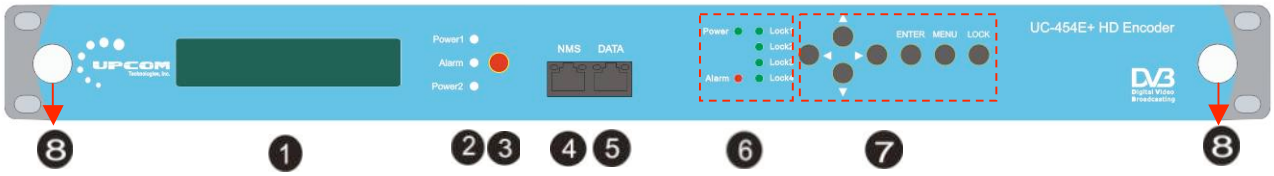
| | |
|---|---|
| Power supply | AC 100V~240V |
| Power Consumption | 45W |
| Dimensions | 482*400*44mm |
| Weight | 4.5 kgs |
| Operation temperature | 0~45℃ |

## 1.4 Principle Chart



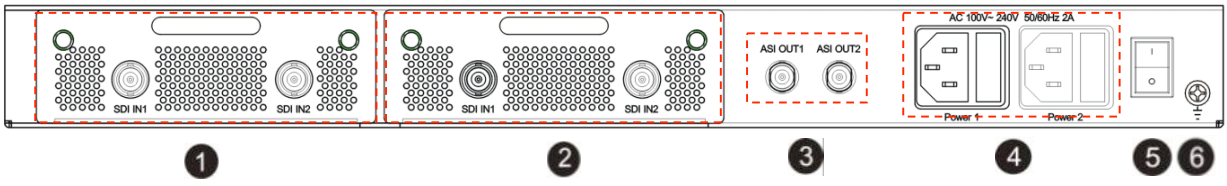

## 1.5 Appearance and Description

Front Panel Illustration




- LCD window
- Power supply indicators
- Power Alarm Switch: When only one power supply is connected or one of the power supplies fails, the device will give alarm sound, and then press the alarm switch to turn off the alarm sound.
- NMS port for the connection between the device and PC
- DATA port for IP signal out
- Indicators for whole unit power supply, working alarm and input signal lock status
- Control Buttons
- Handles

Rear Panel Illustration




⊖ SDI Input Module 1: Program input port 1&2
⊜ SDI Input Module 2: Program input port 3&4
⊛ ASI output ports
④ Power Supply Slot
⑤ Power Switch
⑥ Grounding

# Chapter 2 Installation Guide

This section explains the precautions users must follow to prevent injure to person or equipment. Please read all the details below before installation or use or this product.

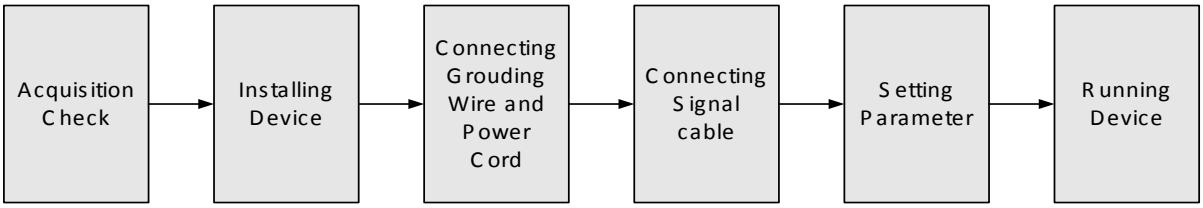
## 2.1 General Precautions

- ✓ Must be operated and maintained free of dust or dirty.
- ✓ The cover should be securely fastened; do not open the products when power is on.
- ✓ After use, securely stow away all loose cables, external antenna, and others.

## 2.2 Power precautions

- ✓ When you connect the power source, make sure it does not cause an overload.
- ✓ Avoid operating on a wet floor and make sure the extension cable is in good condition.
- ✓ Make sure the power switch is on OFF before you begin installation.

## 2.3 Device's Installation Flow Chart Illustrated as following




## 2.4 Environment Requirement

| Item | Requirement |
|---|---|
| MachineHall Space | When user installs machine frame array in one machine hall, the distance between 2 rows of machine frames should be 1.2~1.5m and the distance against wall should be no less than 0.8m. |
| Machine Hall Floor | Electric Isolation, Dust Free<br>Volume resistivity of ground anti-static material: |

| | |
|---|---|
| | $1X10^{7}$~$1X10^{10}\Omega$，Grounding current limiting resistance: 1MΩ (Floor bearing should be greater than 450Kg/㎡) |
| Environment Temperature | 5~40℃(sustainable )，0~45℃(short time)，installing air-conditioning is recommended |
| Relative Humidity | 20%~80% sustainable 10%~90% short time |
| Pressure | 86~105KPa |
| Door & Window | Installing rubber strip for sealing door-gaps and dual level glasses for window |
| Wall | It can be covered with wallpaper, or brightness less paint. |
| Fire Protection | Fire alarm system and extinguisher |
| Power | Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC 110V±10%, 50/60Hz or AC 220V±10%, 50/60Hz. Please carefully check before running. |

## 2.5 Grounding Requirement

- ✓ Good grounding is the basis of reliability and stability for all devices and it is the most important guarantee against lightning arrest and interference rejection. The grounding conductor must adopt a copper conductor in order to reduce high frequency impedance and the grounding wire must be as thick and short as possible.

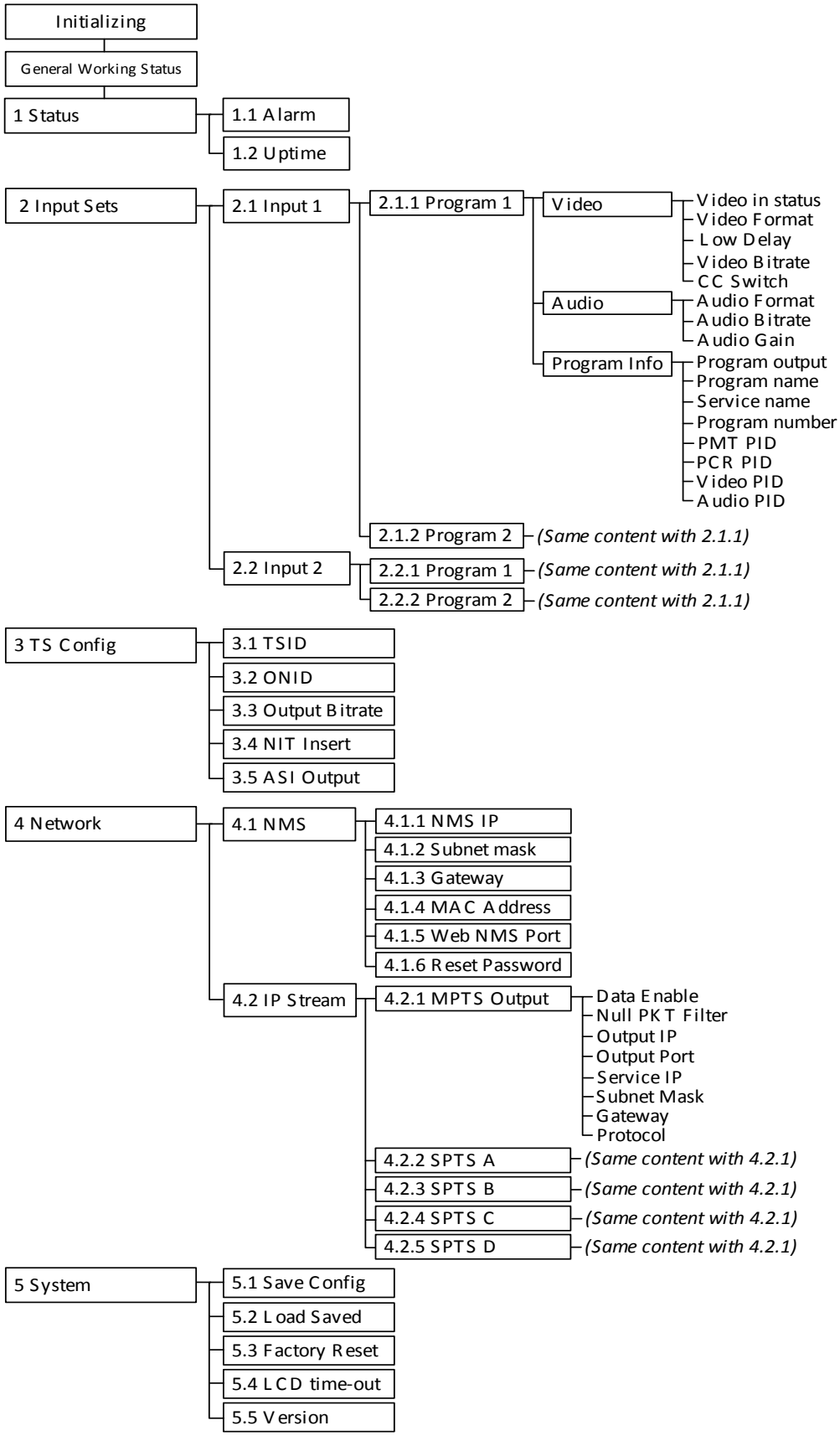
- ✓ Users need to make sure the two ends of the grounding wire are rust-proof and have good electric conductivity.

- ✓ It is prohibited to use any other device as a grounding circuit.

- ✓ The area of the conduction between the grounding wire and the device's frame should be no less than 25 $mm^2$.

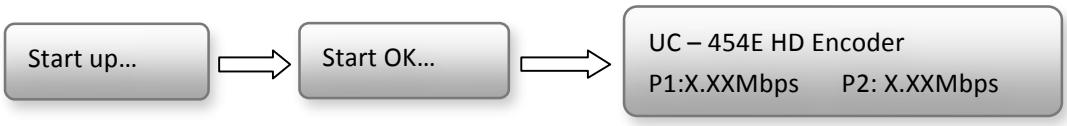
# Chapter 3 Operation

## 3.1 LCD Menu Class Tree



## 3.2 Initial Status

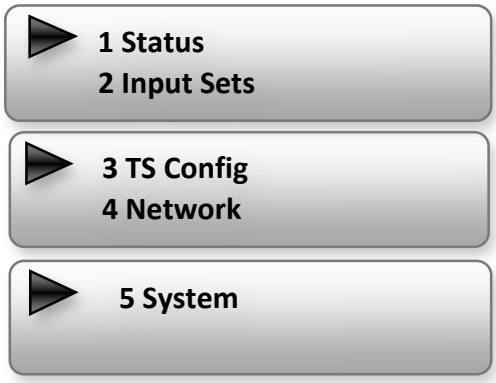
Switch on the device and wait until this screen appears:




- **UC – 454E HD Encoder**: Module number and name
- **P1**: Program 1; **P2**: Program 2; **P3**: Program 3; **P4**: Program 4
- **X.XX Mbps**: indicate the current encoding bit rate of the corresponding channel.

## 3.3 General Settings for Main Menu

Press LOCK key on the front panel to enter the main menu. The LCD will display the following pages where user can configure the parameters for the device.




User can press UP/DOWN buttons to specify one item and then press ENTER to enter its submenus. Press MENU to step back to upper level menu.

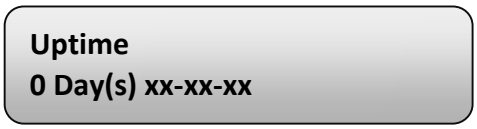
**1) Status**

➢ **Alarm**

The alarm indicator will turn on if there is no A/V signals inputting or outputting bit rate overflows. User then can enter this menu to check the error type.

➢ **Uptime**

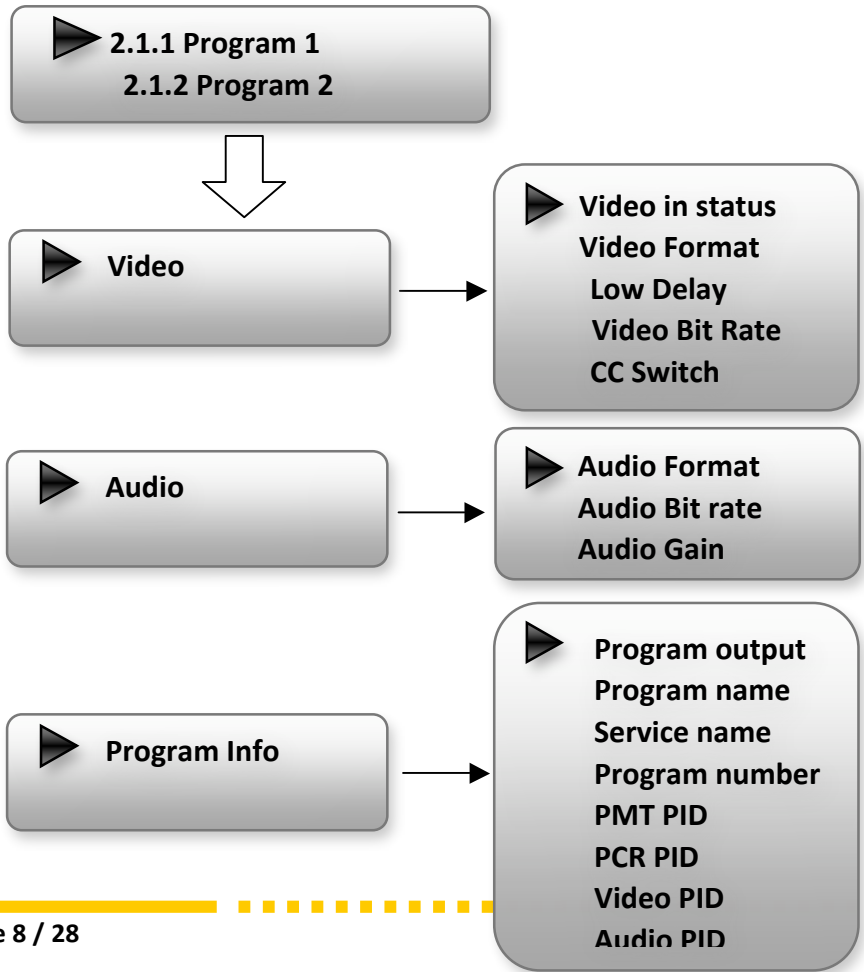
Displays the working time duration of the device.




**2) Input Sets**

Under this submenu, the LCD will show "2.1 Input 1" and "2.2 Input 2" to represent the two SDI-input modules respectively.

Each SDI input module support two program input connecters. Under submenus 2.1 (or 2.2), user could set the video/audio parameters for the 2 SDI programs respectively.



**Video in Status**

Users can enter this menu to check the video input status.

- **Video Format**

The SDI encoding module supports both "MPEG2" and "H.264" video encoding formats. Users can enter this menu to select one format from the 2 options.

Press ENTER to shift '*' to '□', and then press UP/DOWN buttons to specify one item and then press ENTER to confirm. Press MENU to step back to upper level menu. (The operation method is applicable for rest part.)

- **Low Delay**

This unit can achieve a low time delay from encoding to decoding terminal end-to-end.

**NOTE**

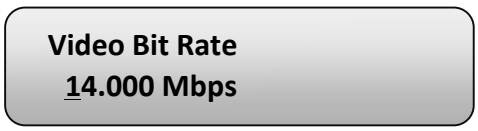
The different combinations of **Video Format**, **Video Bit-rate**, **Low Delay Mode**, **Resolution** of signal source, and **Decoding solution** adopted on terminal side will have an impact on the latency.

- **Video Bit Rate**

Users can set the video encoding bit rate manually in this menu.

0.5~19.5Mbps for H.264 encoding

1~19.5Mbps for MPEG-2 encoding



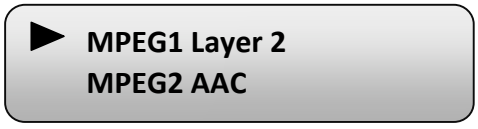

- **CC Switch**

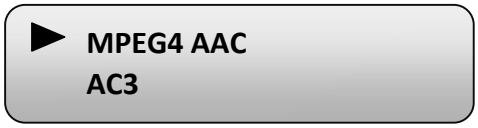
**CC** refers to Closed Caption.

Users can select a standard for the CC from the 2 options in this menu.

- **Audio Format**

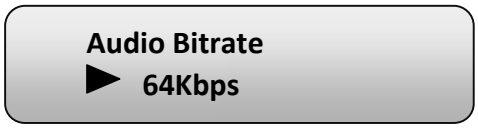
The SDI encoding module supports 4 encoding formats. Users can enter this menu to select one format from the 4 options.



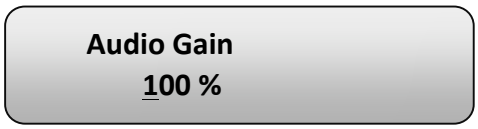

- **Audio Bit Rate**

The audio bit rate ranges from 64Kbps to 320Kbps. Users can select one bit-rate from the options provided.



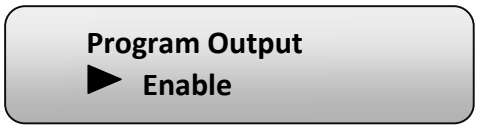

- **Audio Gain**

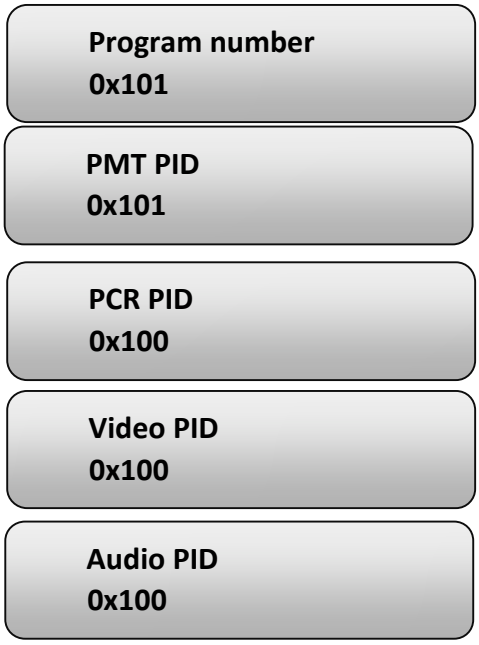
Users can adjust the audio gain in this menu.




- **Program Info**

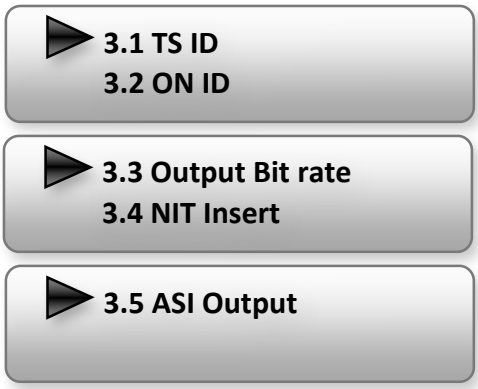
Users can enable or disable the program output in the first sub-menu and configure the other parameters in the rest sub-menus.





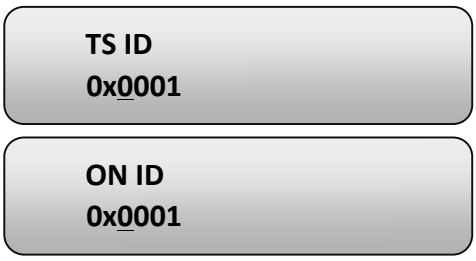

### 3) TS Config

This encoder support TS output via ASI ports. 'TS Config' is for the configuration of ASI output. Its submenus contain:



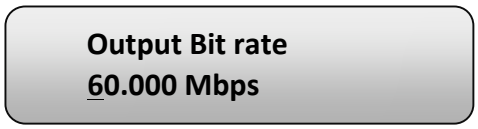

- **TS ID/ON ID**

Users can set the TS ID and Original Network ID in the 2 submenus. The IDs are in hexadecimal form.




- **Output Bit rate**

Users can set the max output bit rate for the ASI MPTS out. (Range 0-100 Mbps)




➢ **NIT Insert**

Users can insert your NIT with operations in the menu.

➢ **ASI Output**

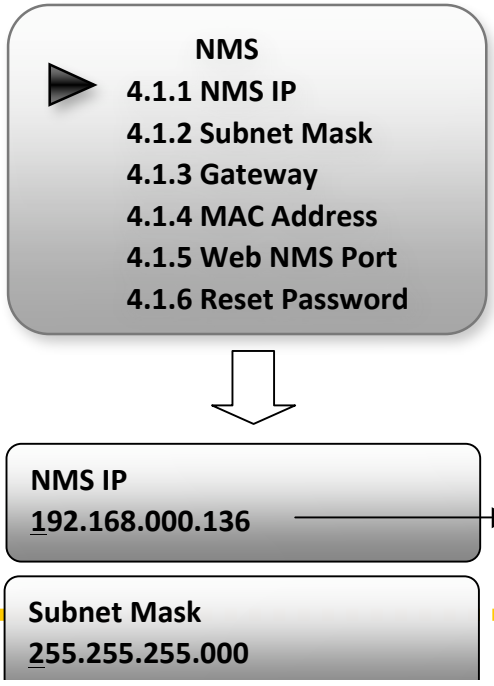
Users can copy a stream from the IP out streams (1 MPTS & 8 SPTS) to output through ASI.

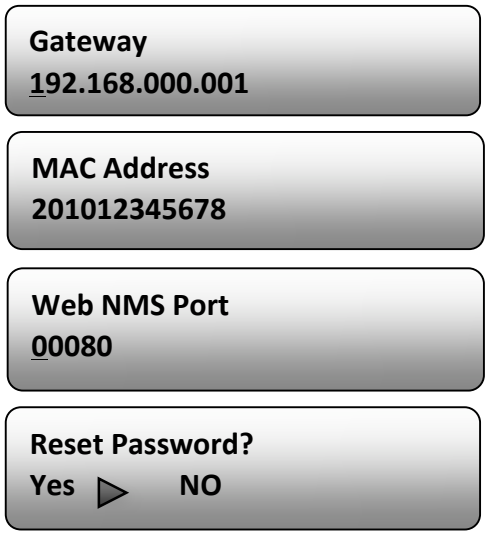
**4) Net Work**

'Net work' is divided into 2 parts: NMS and IP Stream.

➢ **NMS**

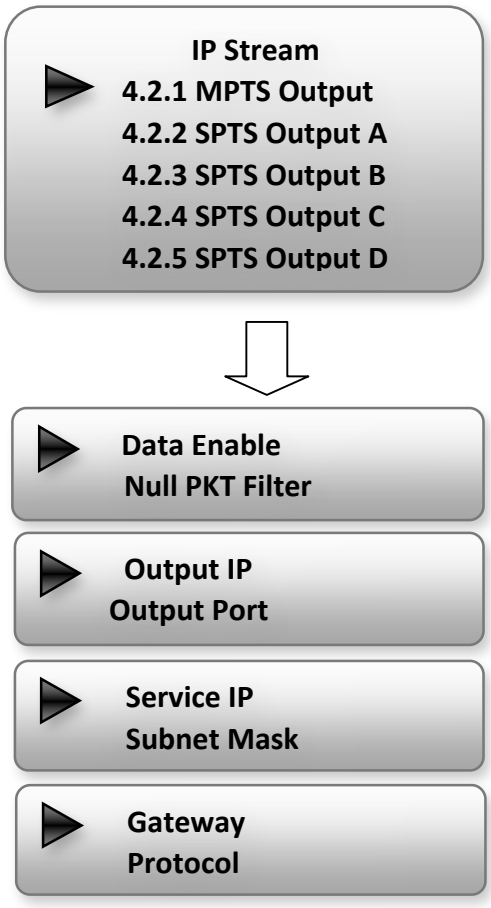
Submenus under 'NMS' are for setting the parameters related to the device connection in the network.






➢ **IP Stream**

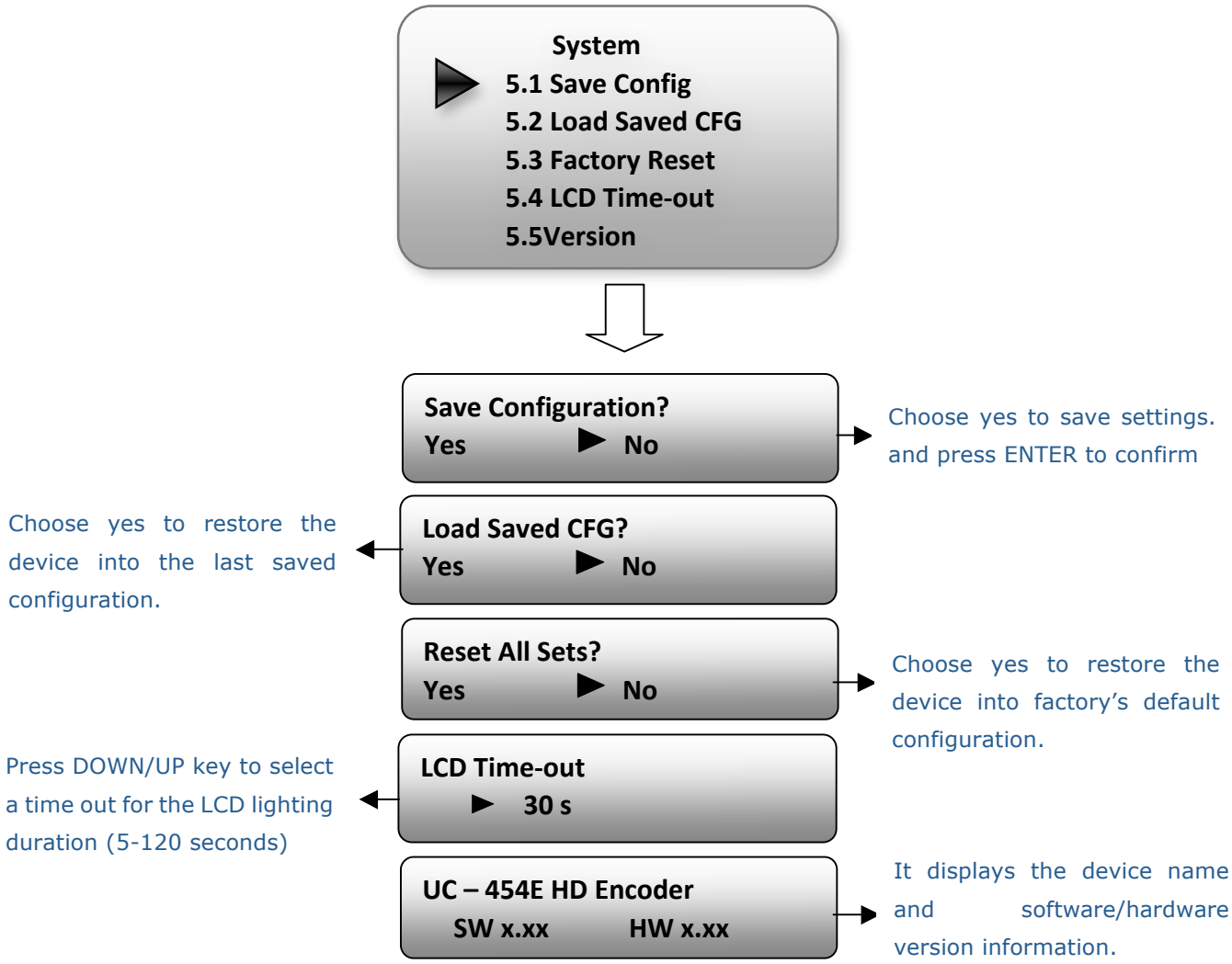
Submenus under 'IP Stream' are for setting the output IP stream in MPTS or SPTS.




**5) System**

Users can set the system parameters in this menu. Enter 'System' submenus to

separately set corresponding parameters.



# Chapter 4 WEB NMS Operation

User can use the front buttons to set configurations and control the configuration by computer when the device connected to web NMS Port. User should ensure that the computer's IP address is different from the encoder's IP address; otherwise, it would cause IP conflict.

## 4.1 login

The default IP address of this device is **192.168.0.136**. but can be modified from the front panel. Connect the PC (Personal Computer) and the device with an Ethernet cable then use the ping command to confirm they are on the same network segment.

I.G. the PC IP address is **192.168.99.252**, we then change the device IP to 192.168.99.xxx (xxx can be 1 to 254 except 252 to avoid IP conflict).

Use the web browser to connect the device with a PC by inputting the Encoder & Modulator's IP address in the browser's address bar and press Enter.

It will display the Login interface as Figure-1. Input the Username and Password (Both the default Username and Password are "**admin**".) and then click "LOGIN" to start the device setting.

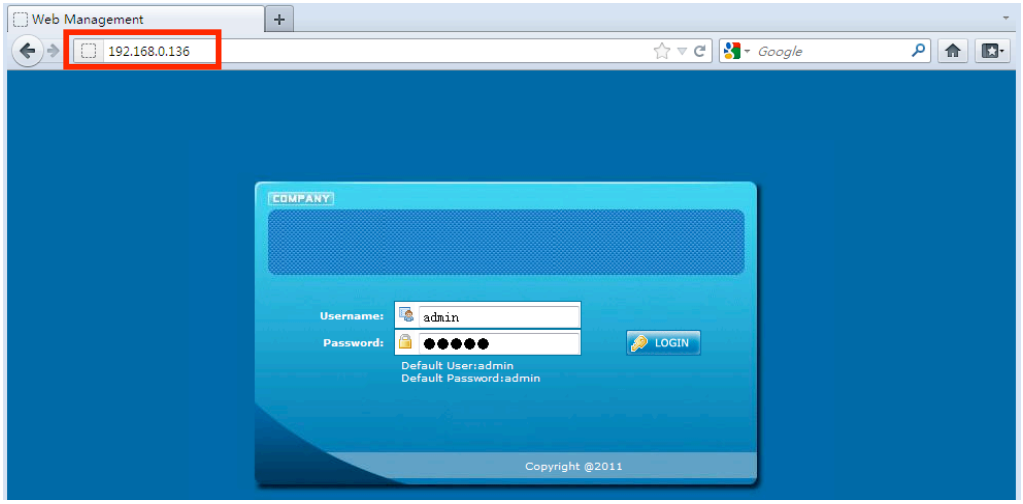



Figure-1

## 4.2 Operation

When we confirm the login, it displays the WELCOME interface as Figure-2.

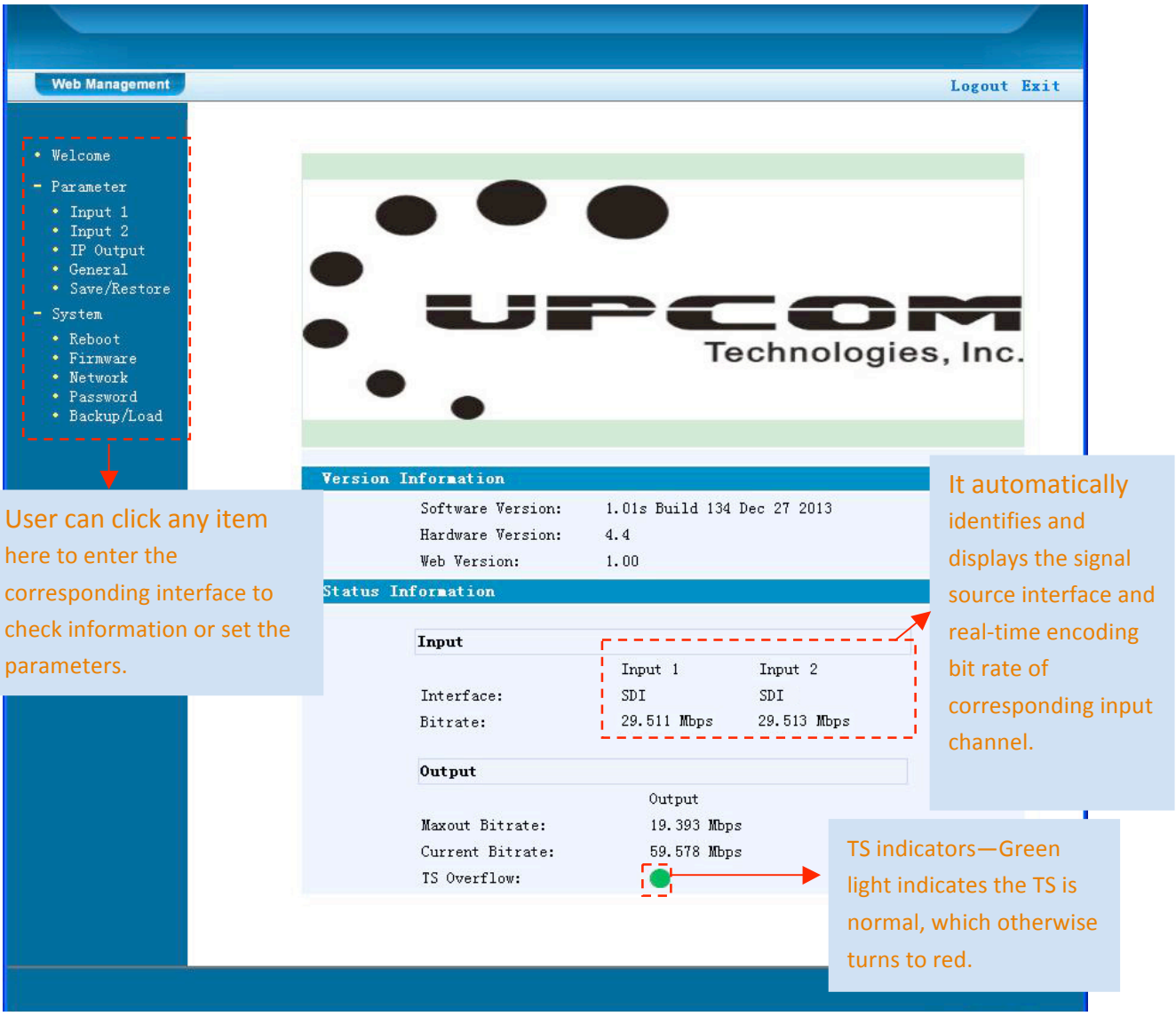



Figure-2

## Input 1

From the menu on left side of the webpage, click “Input 1” to display the information of the programs (1st & 2ed ones) from the 1st SDI encoding module as Figure-3.

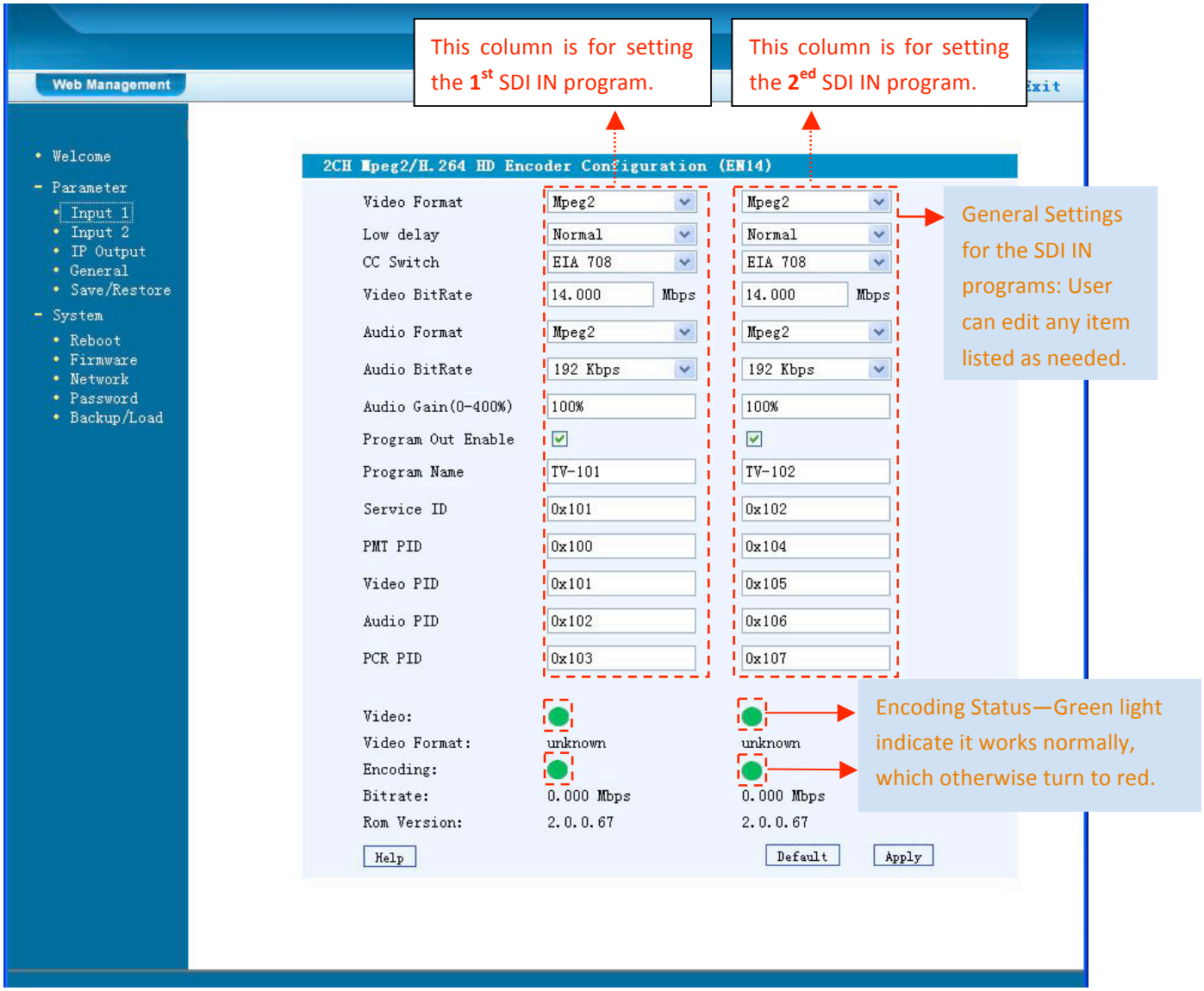



Figure-3

## NOTE

The different combination of **Video Format**, **Video Bit-rate**, **Low Delay Mode**, **Resolution** of signal source, and **Decoding solution** adopted on terminal side will have an impact on the latency.

Help For user to turn to refer detailed explanation of terms on this interface

Default Click this button to apply the default setting of Input 1

Apply Click this button to apply the modified parameters.

## Input 2

Similarly, from the menu on left side of the webpage click “Input 2” to display the information of the programs (3rd & 4th ones) from the 2ed SDI encoding module.

## IP Output

Click “IP Output” to display the interface where to configure the output IP stream in MPTS or SPTS the as Figure-4.

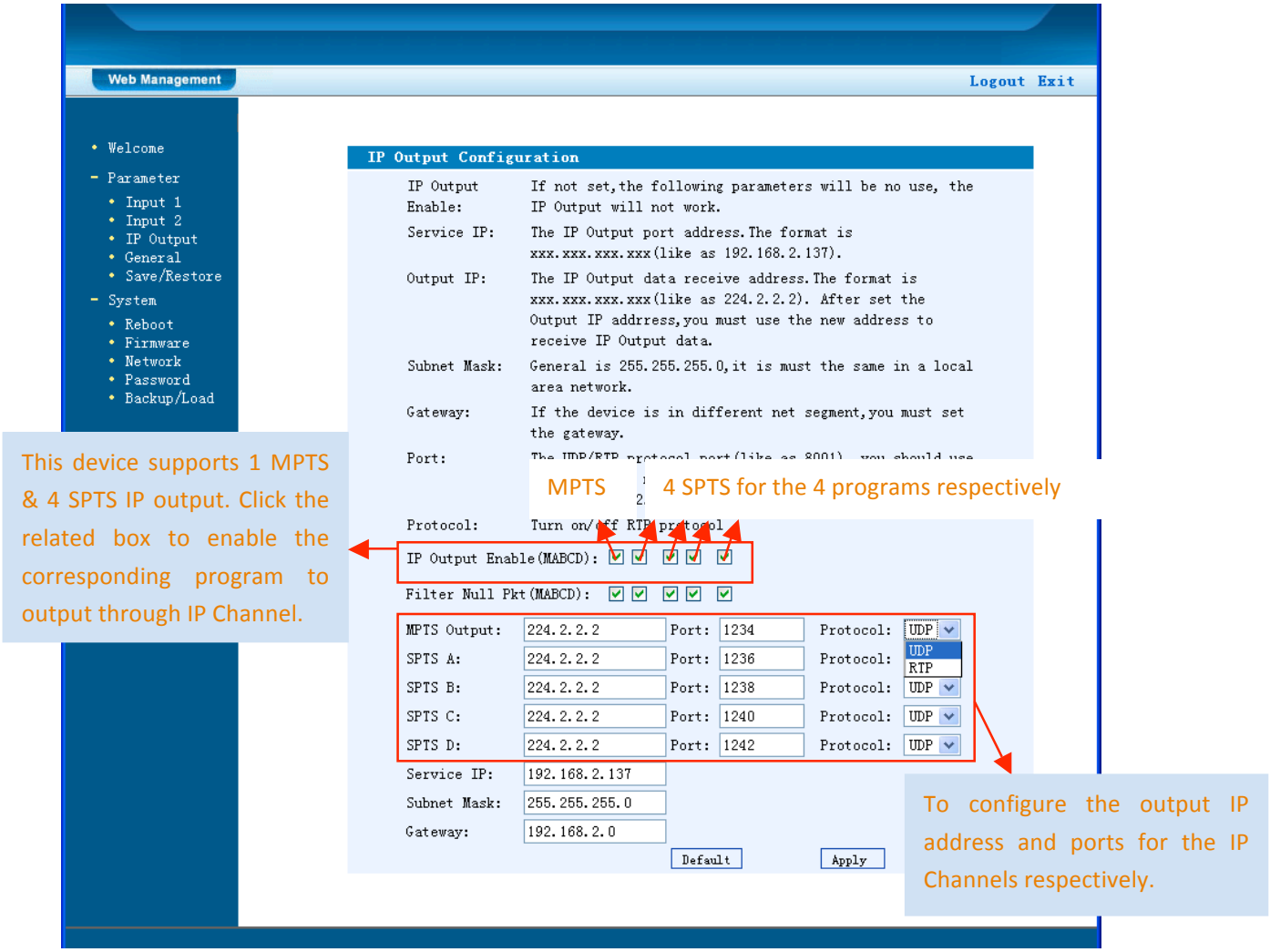

Web Management
Logout Exit
Welcome
Parameter
Input 1
Input 2
IP Output
General
Save/Restore
System
Reboot
Firmware
Network
Password
Backup/Load
IP Output Configuration
IP Output Enable:
If not set, the following parameters will be no use, the IP Output will not work.
Service IP:
The IP Output port address. The format is xxx.xxx.xxx.xxx (like as 192.168.2.137).
Output IP:
The IP Output data receive address. The format is xxx.xxx.xxx.xxx (like as 224.2.2.2). After set the Output IP addrress, you must use the new address to receive IP Output data.
Subnet Mask:
General is 255.255.255.0, it is must the same in a local area network.
Gateway:
If the device is in different net segment, you must set the gateway.
Port:
Protocol:
IP Output Enable(MABCD):
Filter Null Pkt(MABCD):
MPTS Output: 224.2.2.2 Port: 1234 Protocol: UDP
SPTS A: 224.2.2.2 Port: 1236 Protocol: UDP
SPTS B: 224.2.2.2 Port: 1238 Protocol: UDP
SPTS C: 224.2.2.2 Port: 1240 Protocol: UDP
SPTS D: 224.2.2.2 Port: 1242 Protocol: UDP
Service IP: 192.168.2.137
Subnet Mask: 255.255.255.0
Gateway: 192.168.2.0
Default
Apply
MPTS
4 SPTS for the 4 programs respectively
This device supports 1 MPTS & 4 SPTS IP output. Click the related box to enable the corresponding program to output through IP Channel.
To configure the output IP address and ports for the IP Channels respectively.

Figure-4

After setting the parameters, click “Apply” to save the setting.

## General

Clicking “General” from the menu will display the interface as Figure-5 where to set the network info for the output TS.

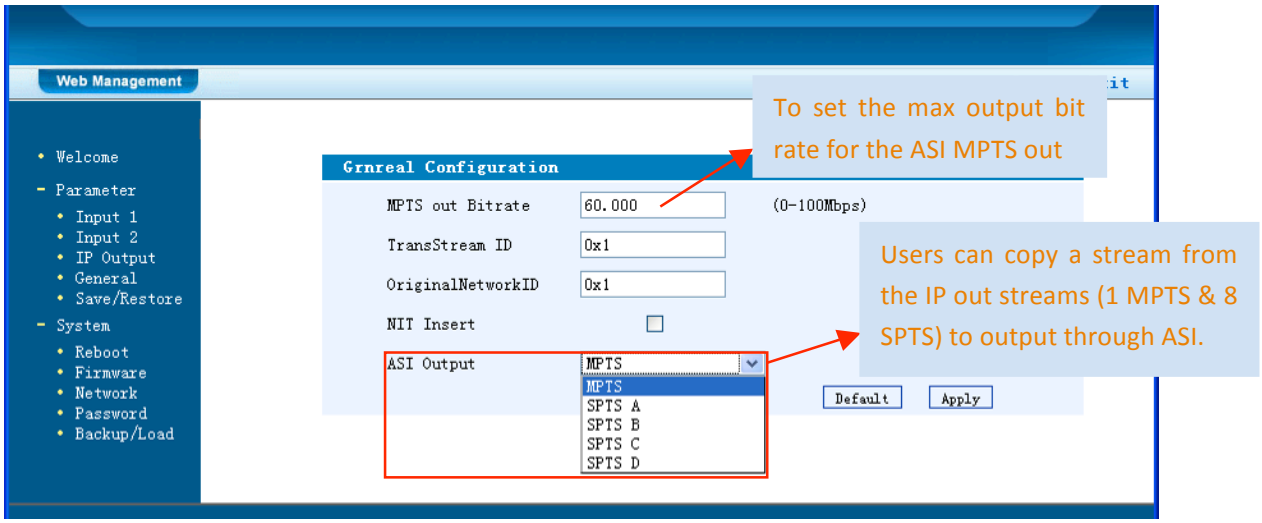



Figure-5

## Save/Restore

From the menu on left side of the webpage click “Save/Restore” to display the screen (Figure-6) where to save or restore your configurations.

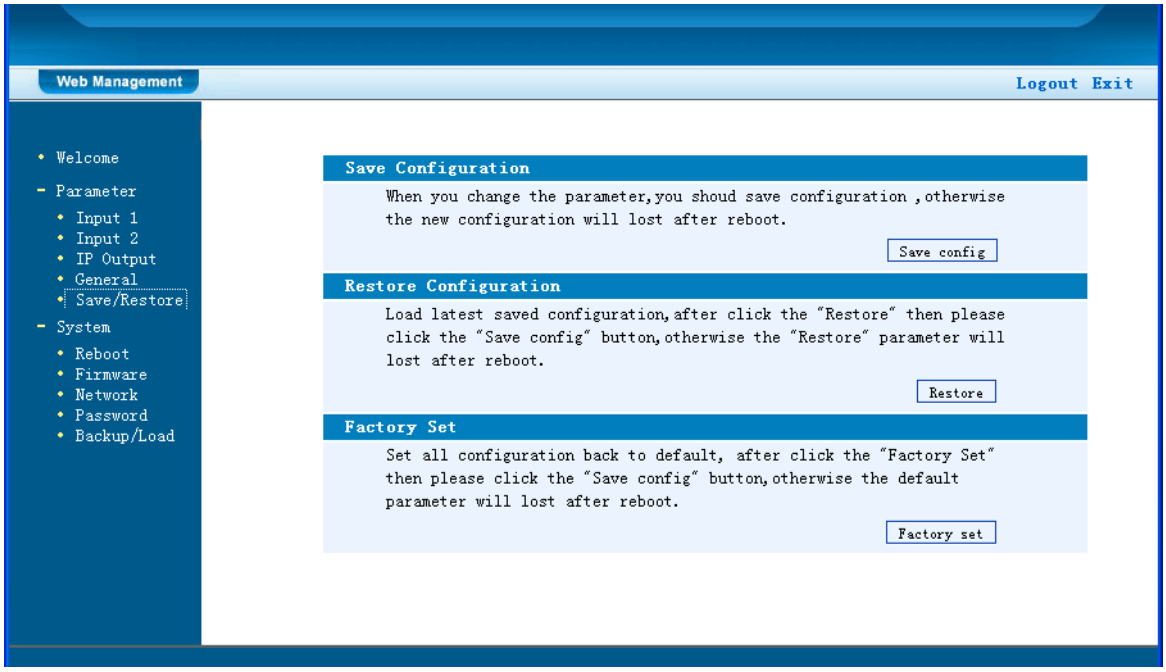



Figure-6

## Restart the Device

By clicking “Reboot” from the left menu, the screen will display Figure-7 and by clicking the “Reboot” box, it will restart the device automatically.

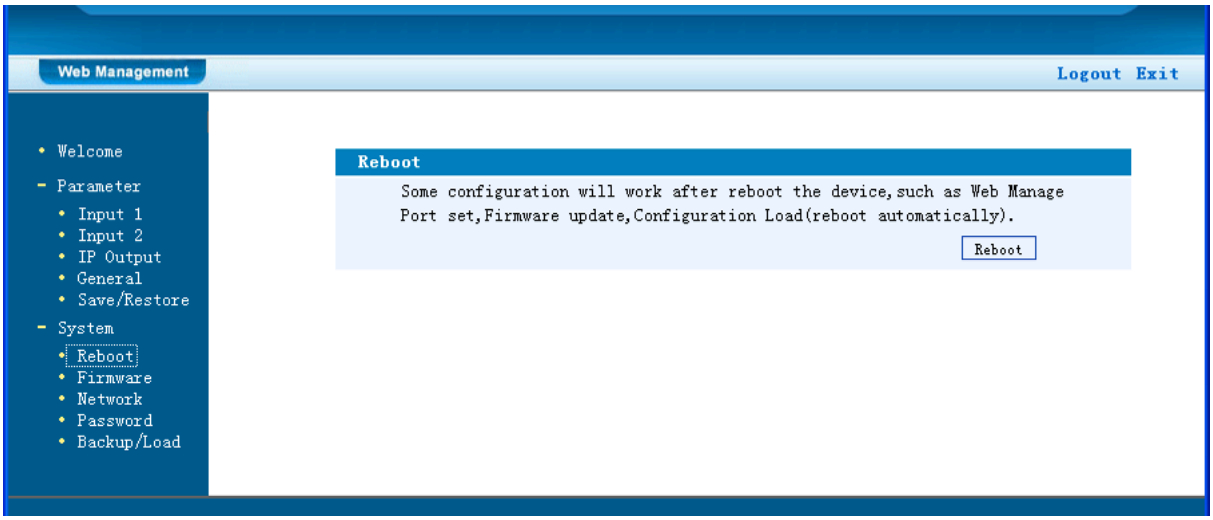



Figure-7

## Update the Device

Click “Firmware” from the menu to display the screen Figure-8. Here the user can update the device by using the update file.

Click “Browse” to find the path of the device update file for this device then click “Update” to update the device.

After updating the device, user needs to restart the device by using Reboot option.

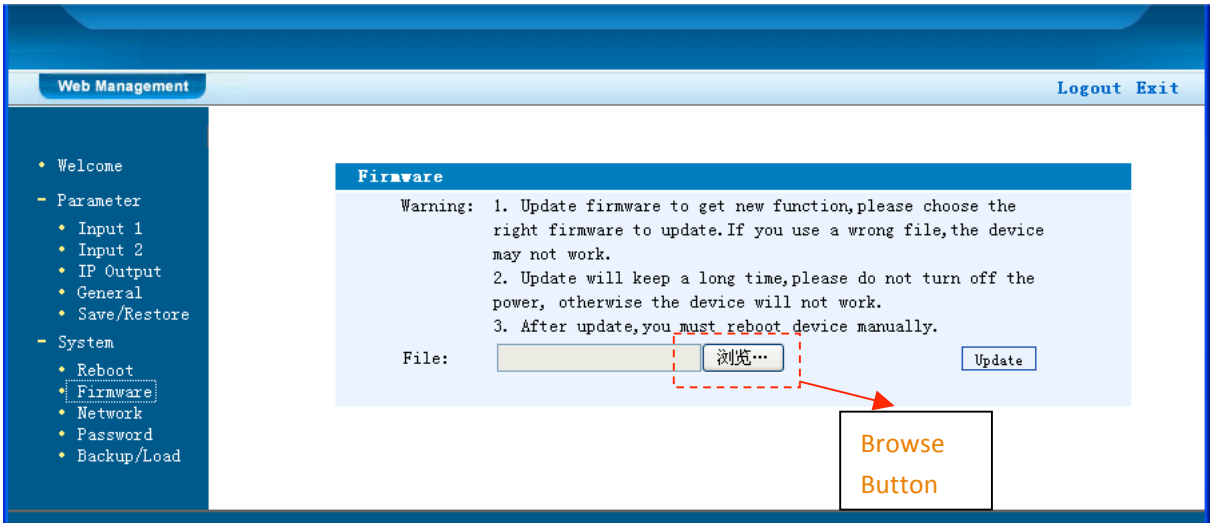



Figure-8

## Network

When clicking “Network”, the display will show the screen Figure-9. It displays the network information of the device and user can change the device network configuration as needed.

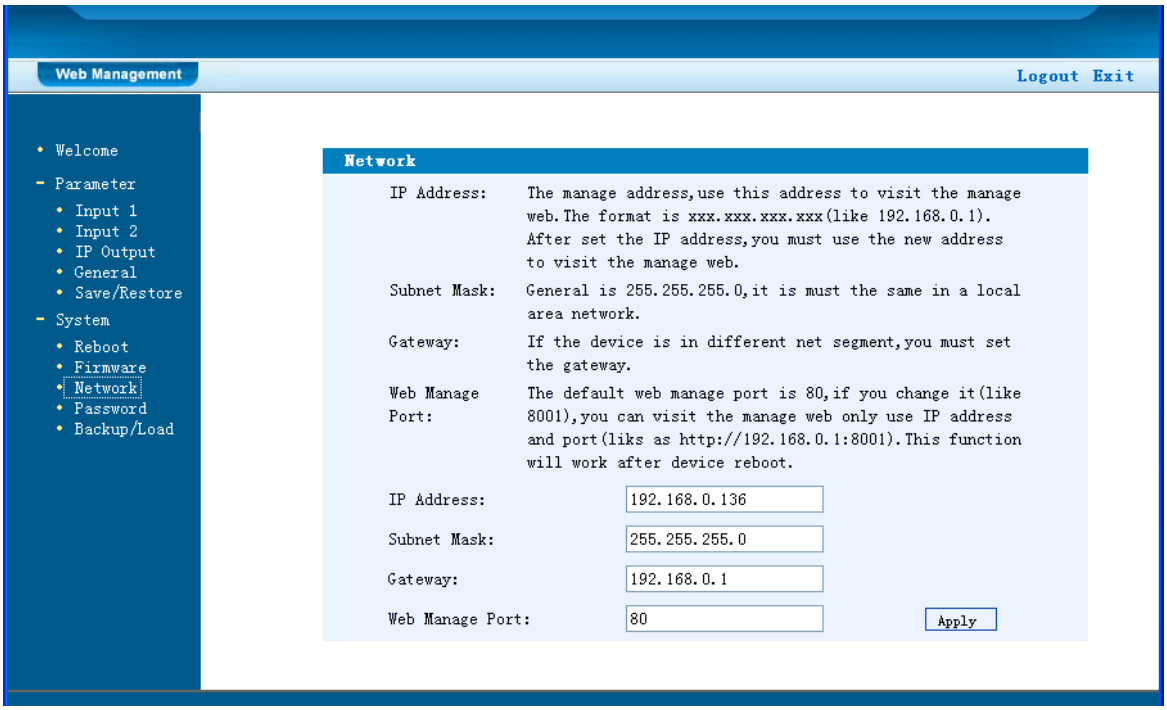

Web Management
Logout Exit
Welcome
Parameter
Input 1
Input 2
IP Output
General
Save/Restore
System
Reboot
Firmware
Network
Password
Backup/Load
Network
IP Address: The manage address,use this address to visit the manage web. The format is xxx.xxx.xxx.xxx(like 192.168.0.1). After set the IP address,you must use the new address to visit the manage web.
Subnet Mask: General is 255.255.255.0,it is must the same in a local area network.
Gateway: If the device is in different net segment,you must set the gateway.
Web Manage Port: The default web manage port is 80,if you change it(like 8001),you can visit the manage web only use IP address and port(liks as http://192.168.0.1:8001).This function will work after device reboot.
IP Address: 192.168.0.136
Subnet Mask: 255.255.255.0
Gateway: 192.168.0.1
Web Manage Port: 80
Apply

Figure-9

## Change Password

When user clicks “Password”, it will display the password screen Figure-10. Here the user can change the Username and Password for logins.

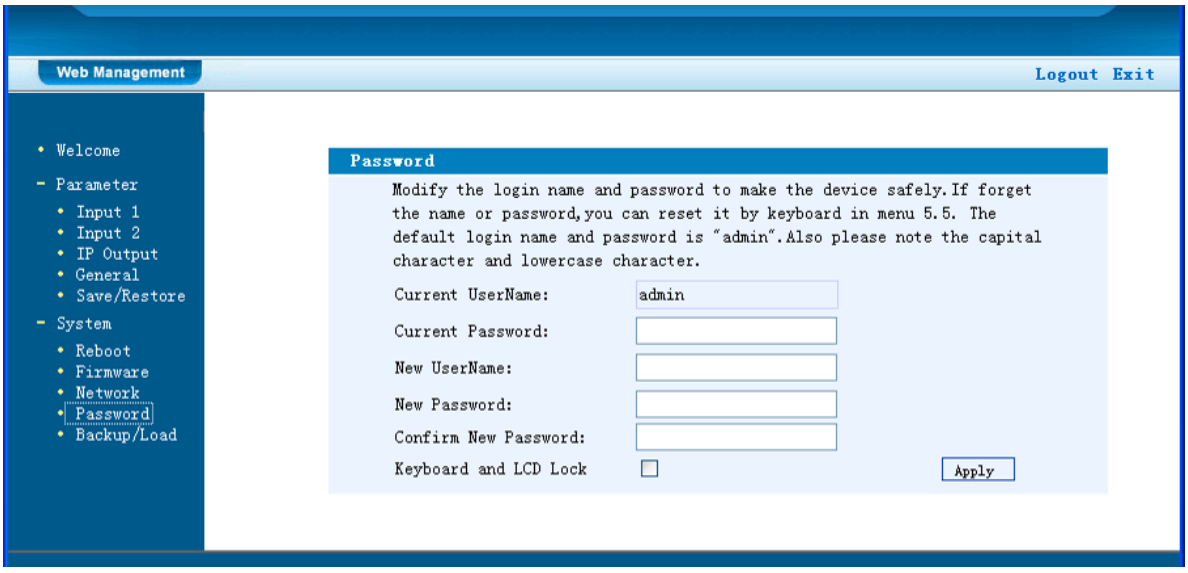
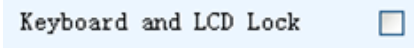
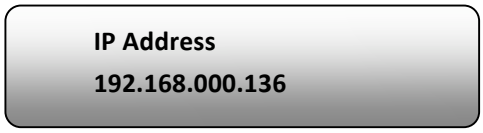



Figure-10




➢ Keyboard and LCD Lock: If it is marked with “√”， the LCD and keyboard will be

locked to avoid unrelated users' modifying or view the device information and configurations. User can't operate the keyboard or LCD while the device IP address is shown in the LCD window.




## Backup/Load

Click "Backup/Load" from the menu to display the screen Figure-11.

**Backup Configuration** – To back up the device configuration file to a folder

**Load Configuration** – If user needs to load the old configuration to the device, click "Browse" and find the backup configuration file path. After selecting the file, click "Load File" to load the backup file to the device.

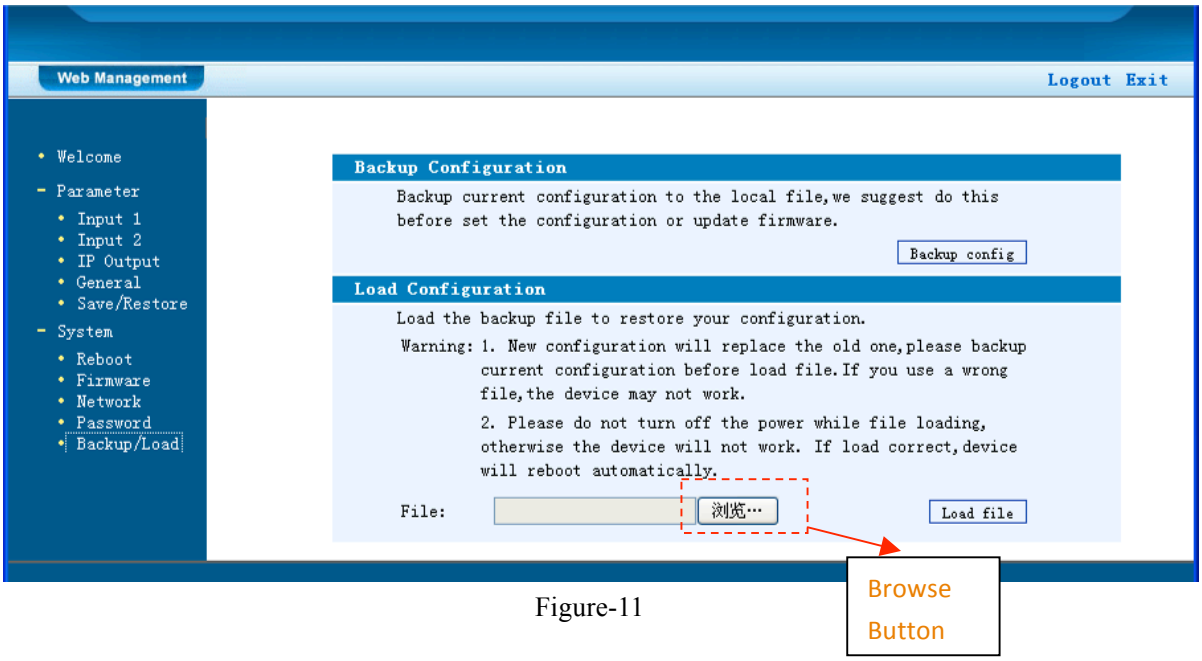

Web Management
Logout Exit
Welcome
Parameter
Input 1
Input 2
IP Output
General
Save/Restore
System
Reboot
Firmware
Network
Password
Backup/Load
Backup Configuration
Backup current configuration to the local file, we suggest do this before set the configuration or update firmware.
Backup config
Load Configuration
Load the backup file to restore your configuration.
Warning: 1. New configuration will replace the old one, please backup current configuration before load file. If you use a wrong file, the device may not work.
2. Please do not turn off the power while file loading, otherwise the device will not work. If load correct, device will reboot automatically.
File:
浏览...
Load file
Browse Button

Figure-11

# Chapter 5 Troubleshooting

Our ISO9001 quality assurance system has been approved by the CQC organization. To guarantee products' quality, reliability and stability, all our products have passed testing and inspection before leaving the factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria, which have been published by our company. To prevent a potential hazard, users must strictly follow the operation conditions.

**Prevention Measure**

- Install the device in temperatures between 0 to 45°C.
- Make sure device has good ventilation for the heat-sink on the rear panel and other heat-sink bores if necessary.
- Check the input AC in the power supply's working range and make sure the connection is correct before switching device ON.
- Check the RF output level varies within the tolerant range.
- Check that all signal cables have been properly connected.
- Frequently switching device on/off is prohibited; the interval between every switching on/off must be greater than 10 seconds.

**Conditions when user should unplug power cord**

- Power cord or socket damaged.
- Any liquid flowed into device.
- Any stuff causes circuit short
- Device in damp environment
- Device was suffered from physical damage
- Longtime idle.
- After switching on and restoring to factory setting, device still cannot work properly.
- Maintenance needed

# Chapter 6 Packing List

| | |
|---|---|
| UC-454E+ HD Encoder | 1PC |
| User Manual | 1PC |
| SDI Cables | 4PCs |
| Power Cord | 1PC |